COUNTY OF SAN DIEGO
Great Government Through the General Management System – Quality, Timeliness, Value
DEPARTMENT OF HUMAN RESOURCES

CLASS SPECIFICATION CLASSIFIED

IT ENGINEER Class No. 002420
SENIOR IT ENGINEER Class No. 002421

■ CLASSIFICATION PURPOSE

To complete highly complex Information Technology (IT) projects involving the design, development, analysis, implementation, and maintenance of software and hardware used to incorporate multi-level information technology systems for designated County departments; and to perform related work as required.

■ DISTINGUISHING CHARACTERISTICS

Information Technology (IT) Engineers serve as administrators, analysts, and designers, and may serve as project leaders and direct the work of subordinate information technology staff. Positions in these classifications are found only in the Department of Child Support Services and offices of elected officials. These classes perform work in three areas of specialty: -- Application Development and Support, Infrastructure Implementation and Support, and Database Administration.

IT Engineer:

This is the journey level class in the IT Engineer series. Under the general supervision of Senior or Supervising IT Engineers, an IT Engineer is responsible for designing, developing, analyzing, implementing, and maintaining software, hardware, and multi-level systems for designated departments. As technical knowledge areas and experience are gained, incumbents will be expected to perform work under less supervision and will be given greater autonomy to perform difficult and complex IT projects. Some positions in this class may be responsible for serving as project leader over a technology team consisting of professional, technical, and support staff.

Senior IT Engineer:

This is the advanced journey/lead level class in the IT Engineer series. Under direction, Senior IT Engineers are responsible for providing technical guidance and leadership to professional IT staff and other employees involved in the design, development, analysis, implementation, and maintenance of highly complex software programs and multi-level platform systems. Some positions in this class may be responsible for providing first line supervision over a technology team consisting of professional, technical, and support staff.

■ FUNCTIONS

The examples of functions listed in the class specification are representative but not necessarily exhaustive or descriptive of any one position in the classes. Management is not precluded from assigning other related functions not listed herein if such duties are a logical assignment for the position.

IT Engineer

Essential Functions:

Application Development and Support

1. Receives and evaluates customer needs in response to requests to develop new applications or enhance existing applications.

2. Develops user requirements by assessing customer needs; defines and documents requirements; and determines if system coordination or interface is required across departments.

3. Analyzes costs and benefits pertaining to developing and enhancing systems and recommends solutions and alternatives.

4. Designs, develops, analyzes, implements, and maintains departmental software applications/products, network systems, imaging systems, and the interfaces with the systems in other County departments and federal and state agencies.

5. Provides technical support to users in assigned department by responding to inquiries or identifying and resolving IT operational problems that cannot be initially resolved by the customer help desks.

6. Develops applications or assists users in developing applications using word processing, spreadsheet, database, presentation, graphics, and utility software.

7. Designs, codes, tests, and implements applications.

8. Develops enhancements and modifications to existing software programs using programming language and other tools.

9. Coordinates planned outage, upgrades, and testing processes with affected customers and ensures that applications are available and maintained in accordance with departmental procedures and defined standards.

10. Designs and develops web-based applications.

11. Prepares technical writings for managers, such as documentation, user manuals, and instructions.

12. Develops management and operational information system reports using a variety of software packages or computer languages.

13. Monitors IT industry for new developments in computer technology to determine if existing hardware or software systems should be upgraded and makes recommendations to Supervising IT Engineers.

Infrastructure Implementation and Support

1. Maintains software and hardware inventories pertaining to network, server, desktop, and software licenses.

2. Provides operational and desktop support to customers or end users such as performing back-ups, recovering system files, retrieving lost data or files, and installing new hardware and software.

3. Determines security access and system integrity pertaining to data security, passwords, and protection from computer viruses.

4. Maintains file/tape inventories, arranges for storage of files and tapes, and organizes electronic retention records.

5. Uses the appropriate software programs to maintain a historical record of end user problems and solutions.

6. Monitors and reports system usage pertaining to networks, systems, and databases.

7. Performs feasibility studies to determine basic software and hardware requirements.

8. Designs, develops, and tests systems prior to deployment.

9. Designs, develops, analyzes, implements, and maintains departmental servers, and electronic mail services, and network solutions.

10. Provides technical consultation to the County Technology Office and IT divisions within other County departments.

11. Specifies, installs, and maintains system hardware platforms.

12. Installs, maintains, and administers department's Land Area Network (LAN)/Wide Area Network (WAN) hardware and network infrastructure.

13. Requests, obtains, and evaluates customer needs and participates in designing, enhancing, or evaluating solutions for hardware and software installations.

14. Conducts cost-benefit studies to determine effectiveness of procuring computer equipment and provides recommendations to Supervising IT Engineers.

15. Coordinates and maintains working and technical relationships with hardware and software vendors by sharing plans and requirements with vendors and obtaining solutions, suggestions, and information on product lines.

16. Trains users including division managers; or identifies alternate training resources.

17. Obtains, reviews, and forwards service requests to County service providers.

18. Tests and evaluates new technologies and provides recommendations to higher level IT Engineers.

19. Uses a variety of software packages or computer languages to develop management information and operational system reports.

20. May develop and maintain system disaster recovery plans.

21. May implement and maintain the security of local area networks (LANs) and wide area networks (WANs).

22. May develop, implement, and maintain network monitoring infrastructure; may analyze network infrastructure and identify problems.

23. May represent the department by attending seminars, trade shows, user group meetings, and other meetings or events pertaining to the IT field.

Database Administration

1. Designs and implements complex databases.

2. Designs, implements, and maintains database upgrades, back-ups, and disaster recovery planning processes.

3. Develops and enforces performance standards pertaining to databases for reasons of security and integrity.

4. Maintains and upgrades database programs in order to optimize performance.

Senior IT Engineer

Essential Functions:

All of the functions listed above and:

1. Acts as the project manager over the design and development of highly complex software systems.

2. Leads a team in strategic planning for IT projects.

3. Provides technical training and guidance to a team of IT employees.

4. Monitors the completion of assignments and large scale IT projects by using tools such as work breakdowns, task lists, charts, and resource loading.

5. Reviews and recommends approval of contract proposals for software and hardware services; provides input and recommendations for highly complex contract proposals for multi-level systems services.

6. Assists Supervising IT Engineers in preparing and adhering to the information technology budget for an assigned department.

7. Reviews new hardware and software to ensure compatibility with existing systems.

8. May provide first line supervision over professional and technical information technology staff.

9. May act in the absence of the Supervising IT Engineer as needed.

■ KNOWLEDGE, SKILLS, AND ABILITIES

Knowledge of:

The following apply to both classes:

– Methods and techniques used to install, test, and operate hardware and software.
– Capability and capacity of various software products/communication utilities.
– Principles of data communications and telecommunications when installing, testing, and maintaining such systems.
– Teleprocessing and telecommunications architecture.
– Micro/mini/mainframe computer operating systems.
– Relational database concepts, database design, and maintenance.
– Standard business practices and basic accounting and fiscal procedures when reviewing and approving contracts and scope of work documents.
– Programming tools and equipment, software, and utilities.
– System fundamentals and concepts.
– Concepts, methods, techniques, and capabilities of data file management, databases, and database products.
– Concepts, methods, techniques, and capabilities of platform connectivity products.
– Concepts, methods, and techniques of project management pertaining to information technology.
– Capabilities of electronic digitizing, imaging, scanning, electronic capturing, and indexing products.
– Strategic initiatives, organizational structure and general functions, activities, and operations of the assigned County department.
– Principles of leadership as applied to serving as a project leader over a team of IT staff.

– Telephone, office, and online etiquette.
– County customer service objectives and strategies.

Senior IT Engineer (In addition to the above):

– Concepts pertaining to the development and implementation of contracts and requirements, policy, and procedures of the Department of Purchasing and Contracting.
– Feasibility study requirements pertaining to existing and new IT systems.
– Principles and practices of supervision and training.

Skills and Abilities:

The following skills and abilities apply to both classes:

– Design, analyze, and implement multi-level platform systems.
– Identify and define software and hardware problems and develop viable solutions and alternatives.
– Assess and define the needs of users or customers and recommend viable solutions and alternatives.
– Use system utilities to effectively resolve hardware/software problems.
– Learn and apply advancements in IT to existing system environments.
– Establish and meet objectives of IT work teams and effectively facilitate and lead the work of a team of IT professional and technical staff.
– Communicate effectively verbally, in a clear, concise, and understandable manner when speaking to individuals and teams.
– Communicate effectively in writing when preparing documents that accurately describe application, hardware, and system configuration interfaces and preparing instructions, training manuals, guidelines, and activity reports.
– Establish effective working relationships with management, employees, representatives of outside agencies, and the general public representing diverse cultures and backgrounds.
– Treat County employees and representatives of outside agencies with courtesy and respect.
– Assess the customer's immediate needs and ensure customer's receipt of needed services through personal service or referral.
– Exercise appropriate judgment in answering questions and releasing information; analyze and project consequences of decisions and/or recommendations.

Senior I.T. Engineer (In addition to the above):

– Design system configurations that are cost effective and meet the needs of users.
– Lead a team throughout highly complex software/system development projects.
– Supervise, train, monitor, and review the work of technical and non-technical IT employees.

■ EDUCATION/EXPERIENCE

Education, training, and/or experience that demonstrate possession of the knowledge, skills and abilities listed above. Examples of such education/experience are:

IT Engineer:

Application Development and Support option

1. An associate's degree from an accredited college or university in computer science, information systems, or related field, AND two (2) years of professional journey level experience designing, developing, analyzing, maintaining, and implementing software programs; OR;

2. Four (4) years of professional journey-level experience designing, developing, analyzing, maintaining, and implementing complex software programs.

Infrastructure Implementation and Support option

1. An associate's degree from an accredited college or university in computer science, information systems, or related field, AND two (2) years of professional journey level experience designing, developing, analyzing, maintaining, and implementing multi-level platform systems in LAN/WAN environments; OR;

2. Four (4) years of professional journey-level experience designing, developing, analyzing, maintaining, and implementing multi-level platform systems.

Database Administration option

1. An associate's degree from an accredited college or university in computer science, information systems, or related field, AND two (2) years of professional journey level experience designing, developing, analyzing, maintaining, and implementing complex database management systems; OR;

2. Four (4) years of professional journey-level experience designing, developing, analyzing, maintaining, and implementing complex database management systems.

Senior IT Engineer:

Application Development and Support option

An associate's degree from an accredited college or university in computer science, information systems, or related field, AND five (5) years of professional experience designing, developing, analyzing, maintaining and implementing highly complex software programs . At least one (1) year of experience as a lead worker or first line supervisor over a team of professional and technical IT staff for an agency or organization is highly desirable.

Infrastructure Implementation and Support option

An associate's degree from an accredited college or university in computer science, information systems, or related field, AND five (5) years of professional experience designing, developing, analyzing, maintaining and implementing multi-level platform systems. At least one (1) year of experience as a lead worker or first line supervisor over a team of professional and technical IT staff for an agency or organization is highly desirable.

Database Administration option

An associate's degree from an accredited college or university in computer science, information systems, or related field, AND five (5) years of professional experience designing, developing, analyzing, maintaining and implementing database management systems. At least one (1) year of experience as a lead worker or first line supervisor over a team of professional and technical IT staff for an agency or organization is highly desirable.

Notes – Both Classifications (all options):

Additional years of directly related verifiable experience may be substituted for the required education on a year-for-year basis. In addition, a bachelor's degree in the fields listed above may substitute for 1 year of experience.
Experience in selling, using, or operating a microcomputer or word processor is not qualifying.
Possession of professional certifications from the categories listed below may be substituted for the education requirement up to a maximum of 2 years. One certification from the categories below may substitute 1 year of the education requirement. Two certifications from 2 separate categories below may substitute for 2 years of the education requirement.

Category 1: Microsoft Certifications
MCSE (current OS), MCSA, MCAD, MCSD, MCPD, MCDBA, or MCAP
Category 2: Cisco Certifications:
Cisco Professional or Expert level certifications such as CCNP, CCIE, CCDP, CCSP, or CCIP
Category 3 Oracle Certifications:
Oracle OCA, OCP, or OCM

■ ESSENTIAL PHYSICAL CHARACTERISTICS

The physical characteristics described here are representative of those that must be met by an employee to successfully perform the essential functions of the classifications. Reasonable accommodation may be made to enable an individual with qualified disabilities to perform the essential functions of a job, on a case-by-case basis.

Frequent: sitting, standing, walking, bending, squatting, crawling, and repetitive use of hands to operate computers, printers, copiers, and telephones, twisting and bending of neck and waist, pushing and pulling carts, reaching above and below the shoulder level. Occasional: When installing and re-installing hardware components, incumbents lift and carry desktop personal computers, monitors, printers, scanners, and other equipment weighing up to 50 pounds for a distance of 3 to 5 feet.

■ SPECIAL NOTES, LICENSES, OR REQUIREMENTS

License

A valid California class C driver's license, which must be maintained throughout employment in this class, is required at time of appointment, or the ability to arrange necessary and timely transportation for travel. Employees in this class may be required to use their own vehicle.

Working Conditions

The primary work place is indoors in office environments. Work involves constant exposure to computer screens and equipment. Work may involve exposure to sharp edges or tools and electrical currents. Work involves frequent travel to locations within and outside of the county. Employees may be required to work during irregular work hours such as evenings, weekends, and holidays and serve on an on-call basis.

Background Investigation

Sheriff/District Attorney/Child Support Services: Must have a reputation for honesty and trustworthiness. Felony convictions will be disqualifying. Misdemeanor convictions may be disqualifying depending on type, number, severity, and recency. Prior to appointment, candidates will be subject to a thorough background investigation which may include a psychological, polygraph or other examination or test.

Probationary Period

Incumbents appointed to permanent positions in these classes shall serve a probationary period of 12 months (Civil Service Rule 4.2.5).

New: November 3, 2000
Revised: August 30, 2002
Reviewed: Spring 2003
Revised: June 7, 2004
Revised: August 11, 2006